

REMARKS

The Examiner has rejected claims 1 and 5-9 under 35 U.S.C. § 103(a) as being unpatentable over McGahay et al. U.S. Patent No. 5,712,702. Claims 10-13 are rejected under § 103(a) as being unpatentable over McGahay in view of Chow et al. U.S. Patent No. 6,872,322. Claims 14-17, 20-21 and 30 are rejected under § 103(a) as being unpatentable over McGahay in view of Tsai et al. U.S. Patent No. 6,592,817. Claim 18 is rejected under § 103(a) as being unpatentable over McGahay et al. in view of Kim et al. U.S. Patent No. 6,436,303. Claims 23-24 are rejected under § 103(a) as being unpatentable over McGahay et al. in view of Nakata et al. U.S. Patent No. 5,989,928. The following remarks are respectfully submitted.

First, in various parts of the Final Office Action, Examiner states "The reference of Tao is relied on as evidence." There is no "Tao" reference that Applicant can identify in the record, either in the references cited by Examiner or cited by Applicant. Therefore, it is believed that Examiner is relying on a reference that has not been properly made of record, and to which Applicant does not have a fair opportunity to respond. Consequently, the Action is defective and a new action should be issued in the event the rejections that rely upon Tao as evidence are maintained.

With respect to the rejection of claims 1 and 5-9 over McGahay, Applicants traverse. As stated on page 11 of the Action, Examiner agrees with Applicant that McGahay monitors emissions from materials other than the quartz system component material. Examiner then goes on to assert that McGahay is nonetheless not overcome because McGahay allegedly teaches the monitoring of "other elements, films, and compositions" and because McGahay teaches monitoring of elements that are different from those presented as specific examples, it would be obvious to include the monitoring of the system component material because it is another material. In support of this reasoning, Examiner refers to Col. 5, lines 23-30 of McGahay. Examiner has taken the passage out of context and applied a broader meaning to it than is consistent with the reference as a whole. The Background of McGahay discusses the difficulties with measuring Si-related peaks in the exhaust gas when the deposition process is for depositing SiO₂ and the chamber includes SiO₂ components. (Col. 1, lines 13-52) Thus, McGahay states a

desire for a method that allows end-point detection in a cleaning method when the chamber is wholly or partially constructed of the same material as that being deposited in a deposition process. (Col. 1, lines 53-67) McGahay goes on to explain the crux of their invention, which involves the use of a marker element, either in the form of a marker film alone or as a layer in a patch, an element in a season film, or an element incorporated into a system component. (Col. 2, lines 1-46; col. 3, lines 39-45) The marker element is described as being an inert gas or other composition not normally found in the atmosphere, such as xenon, krypton, or phosphorus-containing compositions. (Col. 3, lines 12-19) The system includes a means for analyzing the exhaust gas composition, such as an optical emission spectrometer, and for end-point detection, the means monitors the emission intensity at a wavelength representative of the marker element. (Col. 2, lines 27-41; col. 4, lines 32-44 and 60-63) In the passage cited by Examiner in Col. 3, McGahay goes on to explain that only one source of the marker element should be included in the apparatus, i.e., either as an element in a season film (i.e., as an element in a TEOS film), as a marker film, as a marker layer in a multi-layer patch, or as a part of a component construction. Further, other "means" for analyzing the exhaust gas may be used (other than an optical emission spectrometer), such as an RGA technique, and other marker elements, other season film compositions, and other cleaning gas composition different than those presented as specific examples may be used. This passage in no way suggests that the invention of McGahay may depart from analyzing anything other than a marker element in the exhaust gas. What is used as the marker element may differ from the specific examples of xenon, krypton, or phosphorus-containing compositions, but the marker element must still be separately identifiable from the elements that would normally be found in the system atmosphere, else the modification would render the system as no long being directed to its intended purpose. The marker element also may be incorporated into a different season film other than a TEOS film, but the marker element must still be present and is still the element that is monitored by the means for analyzing the exhaust gas. Examiner is therefore incorrect in asserting that McGahay teaches that other elements, films and compositions can be monitored—it is always the marker element that is monitored, but the marker element itself may change, the means of incorporation of the marker element into the

system may change, other materials/gases in the system may change, and the means for analyzing the exhaust may change, but the principle of operation remains unchanged, i.e., the emission intensity of the marker element in the exhaust gas is monitored by a means for analyzing. It is noted that Examiners use of the term "TEOS marker" is incorrect. TEOS is the silicon film, in which the marker element may be incorporated, which in the examples is xenon. In all examples, the 828 nm wavelength, which corresponds to the emission wavelength of xenon, was monitored for peak emissions. At no point in the disclosure did McGahay ever mention or suggest using TEOS as the marker element, or monitoring TEOS, Si, or O or any other material other than the marker element. Furthermore, in view of the Background of McGahay, one skilled in the art would not have a reasonable expectation of success that monitoring the erosion product of TEOS would indicate the end-point of the process, and McGahay teaches against it.

Therefore, as explained above, McGahay does not teach monitoring an erosion product of a system component itself, where the system component is made of quartz, Al_2O_3 , SiN, or SiC. McGahay only teaches or suggests monitoring a marker element that is intentionally distinct from the system component, such that there is no *prima facie* case of obviousness of monitoring the erosion product of these system component materials. It is therefore respectfully requested that the rejection be withdrawn.

With respect to the rejections of the remaining claims over McGahay in view of either Chow et al., Tsai, Kim et al., or Nakata, none of these secondary references cure the deficiencies described above in the teachings of the McGahay reference. Specifically, none of the secondary references teach or suggest to one of ordinary skill in the art to monitor the erosion product of the system component itself rather than an emission intensity of a marker element that is intentionally distinct from the system component materials in an end-point detection process.

In view of the foregoing remarks, Applicants respectfully believe this case is in condition for allowance and respectfully request allowance of the pending claims. If the Examiner believes any detailed language of the claims requires further discussion, the Examiner is respectfully asked to telephone the undersigned attorney so that the matter may be promptly resolved. The Examiner's prompt attention to this matter is appreciated.

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Applicants are of the opinion that no additional fee is due as a result of this Amendment. If any charges or credits are necessary to complete this communication, please apply them to Deposit Account No. 23-3000.

Respectfully submitted,

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